

REVIEW

***Digital Innovations in European Archaeology*. Kevin Garstki. 2020. Cambridge University Press, Cambridge. 80 pp. \$20.00 (paperback), ISBN 978-1-108-74412-6. \$16.00 (e-book), ISBN 978-1-108-89515-6.**

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Kevin Garstki's *Digital Innovations in European Archaeology* is an important and accessible survey of key digital techniques for recording and visualizing archaeological data that are currently in use by many European archaeologists. Its importance comes from the fact that European archaeologists are not only among the most adventurous and innovative users of technology in archaeological fieldwork but also very engaged in critical introspection of the impact of technology on the discipline and its engagement with the public.

This easy-to-read book is organized into six chapters. The first chapter makes the case that modern archaeology in Europe is inescapably digital; it argues that archaeologists should be aware of how digital innovations have irreversibly altered archaeological practice and epistemologies. Chapter 2 surveys digital data collection tools used during fieldwork, noting the lack of standardization. Case studies using lidar and computational photogrammetry are briefly summarized. Garstki argues that, even though the analytical possibilities of the 3D models of sites and objects generated by these technologies remain underexplored, they have proven effective in enhancing public engagement and storytelling.

Chapter 2 closes with several important debates: Are digital recording strategies a paradigm shift (Garstki: a firm no), are they Latourian black boxes hiding unexamined assumptions (Garstki: yes, but this is not a fatal flaw), does standardization result in a loss of information (Garstki: yes, and this should give us pause), and finally, does technology in the field segment the archaeological community into “haves and have nots, or cans and cannots”? In engaging with this debate about exclusion, Garstki notes that although big, well-resourced projects are often where technologies are seen first and used most extensively, they provide guidance that enable smaller projects to experiment with new technologies. He further notes that this issue of inequality is not unique to digital technology: there have always been differences in the resources available to archaeological projects, and that is unlikely to change because those differences are beyond the control of archaeologists.

Garstki is a firm “no” on the argument that some archaeologists have an innate ability to learn new digital skills while others do not. This is a controversial point, with Rich Potter and colleagues (“Everyone Has to Start Somewhere: Democratisation of Digital Documentation and Visualisation in 3D,” *Open Archaeology* 11(1):20250054, 2025) recently arguing that archaeologists should prefer black-box software and eschew understanding the coding behind them. I believe Garstki is correct in stating that “worry over being ‘technologically inclined’ or not is really a concern over the time commitment to learning new skills” (p. 20). Concern about the inability of archaeologists to learn digital tools is a self-sabotaging emotional response based on outdated stereotypes. I see archaeology students flocking to GIS courses, thinking nothing of computing Bayesian calibrations of radiocarbon ages, and routinely learning to level a total station in field schools. They do these things because the archaeological community has agreed they are beneficial for the goals of archaeological work. Contrary to the assertions of Potter and colleagues, these core tasks are not harder than learning to use software tools such as open-source programming languages for data analysis. In my experience it does not take longer for students to gain a basic level of proficiency in deploying them.

Chapter 3 reviews case studies of 2D and 3D digital models of artifacts. On the one hand, Garstki considers geometric morphometrics to be a productive tool for the quantitative analysis of artifact shape. On the other hand, reflectance transformation imaging (RTI) is noted for its qualitative and sensory contributions because of its ability to highlight subsurface features or subtle surface variations, which creates a more intimate connection between the observer and the maker. Case studies of digital reconstructions of archaeological sites presented through virtual reality systems are positively noted for their contribution to enhanced storytelling in archaeological education. Problems with these reconstructions include concretizing a “best guess” that might contain errors or missing details, as well as difficulty in communicating uncertainty in digital reconstructions. Chapter 3 closes with a review of online platforms for sharing 3D data and a discussion of some interesting case studies that raise important questions about authenticity, authority, and ownership of 3D data and reconstructions.

Chapter 4 summarizes key topics, services, and standards relating to data archiving and dissemination. Open data, open code, and open-source software are encouraged because of their potential to benefit archaeological research throughout Europe. Chapter 5 is a thoughtful and balanced survey of digital technologies in public and community archaeology. The discussion of risks and limitations of public interaction with heritage through digital technologies should be required reading for any archaeologist who wants to share their project or publications on social media.

The final chapter addresses the question of what the archaeology of Europe will look like in the future. A key part of his answer relates to big data and machine learning. However, it is hard to imagine big data transforming European archaeology anytime soon, given its current pluralism in terminology, methods, and field protocols, which hints at deeper conceptual and philosophical divisions among archaeologists. Similarly, it is not clear how machine learning will be widely used except for a few niche applications, such as site detection from remote sensing (e.g., lidar data analysis) and typological classification of very specific types of artifacts (e.g., decorated ceramics). Garstki closes by noting that digital technologies increasingly estrange archaeologists from the traditional practices of archaeology. Although he sees this as part of a broader trend of technology in society, Garstki reminds us that technologies are not neutral or passive, and he encourages archaeologists to be intentional in the use of these tools.